Claims

1) A system for manufacturing containers, in particular for preserving food products, comprising a supporting structure and characterized in that it is a system (1) composed entirely of parts associated with the supporting structure (2), namely: a forming sector (3) supplied with a continuous strip (8, 12) of forming material (9) used in the preparation of at least one blank (4) from which to fashion a respective container (5), and establishing a first leg (B) of a feed path followed by the material (9); a transfer device (20) operating downstream of the forming sector (3), serving to distance the forming material (9) from the forming sector (3) and establishing a second leg (C) of the feed path followed by the material; and a shaping sector (6) operating downstream of the forming sector (3), by which each blank (4) emerging from the sector (3) is folded and caused ultimately by means of a fixing operation to assume the shape of the container (5) produced by the folding step, the shaping sector (6) establishing a third leg (D) of the feed path followed by the forming material (9).

2) A system as in claim 1, wherein the forming sector (3) and the shaping sector (6) are arranged in line operationally, so that the path followed by the forming material (9) when advancing between the

forming sector (3) and the shaping sector (6) is substantially linear.

3) A system as in claim 2, wherein the shaping sector (6) comprises at least two substantially parallel shaping lines (6a) onto which the forming material (9) emerging from the forming sector (3) is directed.

4) A system as in claim 1, wherein the first leg (B) of the feed path extends substantially parallel to the longitudinal dimension of the supporting structure (2); the second leg (C) of the fed path extends transversely to the first leg (B); and the third leg (D) of the feed path extends substantially parallel to the first leg (B) and transversely to the second leg (C).

5) A system as in claim 4, wherein the legs (B, C, D) are disposed in such a manner that the forming material (9) will follow a feed path (A) extending externally of the supporting structure (2) at least in part, and presenting substantially a letter-C configuration by which the supporting structure is circumscribed at least in part.

6) A system as in claims 1 to 5, wherein the forming sector (3) comprises: a feed station (7) supplying the forming material (9); a cutting station (19) operating downstream of the feed station (7), by

which the forming material (9) is divided into a succession of discrete lengths each constituting a respective blank (4); a scoring station (18) operating downstream of the feed station (7), by which at least one crease line (4a) is applied to each length of forming material (9) constituting a blank (4); and a preforming station (21) operating downstream of the feed station (7), by which the forming material (9) is bent initially along the crease line (4a).

7) A system as in claim 6, wherein the feed station (7) comprises at least one main supply reel (10) carrying a coiled continuous strip (8) of the forming material (9) and rotatable about a respective longitudinal axis (X) in such a way that the continuous strip (8) of forming material (9) can be decoiled.

8) A system as in claim 7, wherein the feed station (7) comprises at least one auxiliary supply reel (11) carrying a further continuous strip (12) of the forming material (9) that can be spliced to the continuous strip (8) of the main reel (10) to guarantee continuity of the supply of forming material (9), each supply reel (10, 11) being replaceable, on final depletion of the relative forming material (9), with a further reel (10, 11) carrying a fresh supply of the forming material (9).

9) A system as in claims 6 to 8, where claim 6 is dependent on claim 4 or 5, wherein the first leg (B) of the feed path (A) followed by the forming material (9) is established by a plurality of guide elements (13) constituting part of the feed station (7).

10) A system as in claims 7 to 9, further comprising a traction device (14) operating by direct interaction with the forming material (9) at a point downstream of the feed station (7) and serving to decoil the selfsame material from the relative supply reel (10, 11).

11) A system as in claim 10, wherein the traction device (14) comprises a pair of pinch rolls (14a), positioned mutually tangential and establishing a passage (14b) through which the forming material (9) is directed, including at least one roll (14a) that can be power driven in rotation to the end of advancing the forming material (9) through the passage (14b) of the device (14).

12) A system as in claim 10 or 11, further comprising at least one tensioning device (16) operating upstream of the traction device (14) and in such a manner that the segment of forming material (9) extending downstream of the selfsame device (16) is subjected to a predetermined longitudinal tension.

13) A system as in claim 12, wherein the tensioning device (16) comprises at least one pair of pinch rolls (16a), positioned mutually tangential and establishing a passage (16b) through which the forming material (9) is directed, including at least one roll (16a) subjected to a braking action when in rotation in such a way as to tension the forming material (9) advancing through passage (16b) of the device (16).

14) A system as in claims 5 to 13, comprising at least one sterilizing device (17) operating along the feed path (A) followed by the forming material (9) and serving to debacterialize the selfsame material.

15) A system as in claim 14 where dependent on claim 12, wherein the sterilizing device (17) operates on the forming material (9) at a point between the tensioning device (16) and the traction device (14).

16) A system as in claims 5 to 15, wherein the scoring station (18) is positioned to operate at a point along the feed path (A) followed by the forming material (9), between the feed station (7) and the cutting station (19).

17) A system as in claim 16, wherein the scoring station (18) comprises at least one press (18a) presenting mutually opposed dies (18b) offered to the two faces of the forming material (9), capable of

alternating between an idle position in which the dies (18b) are distanced from the forming material (9) interposed between them, and an operating position in which they are brought together forcibly against the forming material (9) in such a way as to generate the crease line (4a).

18) A system as in claim 17, wherein the cutting station (19) comprises at least one blade (19a) positioned to operate in close proximity to the scoring station (18) in such a way that the forming material (9) can be cut immediately adjacent to the press (18a), capable of alternating between an idle position distanced from the forming material (9), and an operating position of engagement with the selfsame material (9), in which a blank (4) is separated.

19) A system as in claim 18, wherein the blade (19a) of the cutting station (19) can be timed to alternate between the idle position and the operating position synchronously with the movement of the press (18a) of the scoring station (18) between the relative idle position and operating position, in such a manner that the press (18a) of the scoring station (18) and the blade (19a) of the cutting station (19) are made to engage the advancing forming material (9) simultaneously.

20) A system as in claims 4 to 19, wherein the transfer device (20) comprises at least one gripper

element (20b) serving to take up each blank (4) of forming material (9) released from the cutting station (19), and capable of movement along the second leg (C) of the feed path between the cutting station (19) and the shaping sector (6) to the end of advancing each successive blank (4).

21) A system as in claims 6 to 20, wherein the prefolding station (21) operates at a point on the second leg (C) of the feed path downstream of the cutting station (19), in such a manner as to initiate a bend in the length of forming material (9) constituting each blank (4) along the relative crease line (4a) generated by the scoring station (18).

22) A system as in claims 5 to 21, further comprising a finishing device (22) associated with the feed station (7) and designed to operate on at least one bonding edge (4b) of the advancing forming material (9) in such a way that the bonding edge of the single blank (4) is rendered suitable for positioning on the inside of the relative container (5).

23) A system as in claim 22 where dependent on claim 12, wherein the finishing device (22) operates between the tensioning device (16) and the traction device (14).

24) A system as in claim 22 or 23, wherein the finishing device (22) comprises: seam-folding means

by which the bonding edge (4b) is bent double along its length in such a way that the bonding edge (4b) of each blank will present a treated portion directed toward the inside of the relative container (5); also fixing means by which to secure the bonding edge (4b) in the bent configuration.

25) A system as in claim 22 or 23, wherein the finishing device (22) comprises application means by which to lay a fillet of treated material (23) over the raw edge of the advancing material (9), so that the bonding edge (4b) of each blank will be covered by a layer of material suitable for positioning on the inside of the relative container (5).

26) A system as in claims 1 to 21, wherein the shaping sector (6) comprises: a folding station (24) at which each blank (4) is bent along the crease lines (4a) in such a way as to take on the shape of the container (5) being manufactured, and a sealing or welding station (25) located downstream of the folding station (24), where each blank (4) is secured in the configuration presented on emerging from the folding station (24) to assume the definitive shape of the relative container (5).

27) A system as in claim 26, wherein the sealing or welding station (25) comprises at least one sealer or welder such as will fix each blank (4) in the

definitive configuration of the manufactured container (5).

28) A system as in claim 26 or 27, further comprising an assembly station (26) operating between the folding station (24) and the sealing or welding station (25) and serving to apply at least one neck (5a) to each folded blank (4) emerging from the folding station (24), wherein each neck (5a) is fixed to the folded blank (4) at the sealing or welding station (25) through the agency of the sealer or welder.

29) A system as in claims 4 to 28, further comprising feed means associated with the supporting structure (2) and serving to guarantee the movement of the forming material (9) between the stations (7, 18, 19, 21, 24, 25) of the system (1), wherein such means comprise the transfer device (20) and cause the forming material (9) to pass from one station (7, 18, 19, 21, 24, 25) to the next substantially at a predetermined and uniform tempo.

30) A method of manufacturing containers, in particular for preserving food products, comprising the steps of: forming a succession of blanks (4) from which to fashion respective containers (5), by dividing a continuous strip (8, 12) of forming material (9) into discrete lengths; shaping each blank (4) obtained by way of the forming step, in

such a way as to assume a definitive and permanent configuration, characterized in that the steps of forming the blanks (4) and shaping the containers (5) are implemented continuously on a single system (1), without any break in continuity between the forming step and the shaping step.

31) A method as in claim 30, wherein the step of forming the blanks (4) comprises the single steps of: causing a continuous strip (8, 12) of forming material (9) to advance along a feed path; scoring the forming material (9) along at least one crease line (4a) occupying a portion of the material (9) that will ultimately provide a blank (4); cutting the continuous strip (8, 12) of the forming material (9) to separate at least one discrete length constituting a blank (4); bending the forming material (9) of each blank (4) along the crease lines (4a).

32) A method as in claim 31, wherein the steps of scoring and of cutting the forming material (9) are implemented simultaneously.

33) A method as in claim 31, wherein the step of folding the forming material (9) of each blank (4) is implemented after the scoring and cutting steps.

34) A method as in claim 31, further comprising a finishing step, preceding the scoring step, by which at least one bonding edge (4b) of the continuous

strip of forming material (9) is prepared in such a way as will render it suitable for positioning on the inside of the relative container (5).

35) A method as in claim 34, wherein the step of preparing the bonding edge (4b) comprises the single steps of: folding the edge (4b) double longitudinally against the face of the material (9) opposite the face that will be located ultimately on the inside of the container (5), to produce two thicknesses of material breasted fully in contact; securing the two thicknesses of folded material permanently together so that the external surfaces of the double folded bonding edge (4b) will be offered ultimately to the inside of the container (5).

36) A method as in claim 34, wherein the step of preparing the bonding edge (4b) comprises the step of applying at least one fillet (23) of treated material to the raw edge of the forming material (9) along its full length, so that the bonding edge (4b) will be covered entirely by a portion of material suitable for positioning on the inside of the relative container (5).

37) A method as in claims 30 to 36, wherein the step of shaping each blank (4) to produce a respective container (5) comprises the single steps of: bending the blank (4) further along the crease line (4a) to obtain the definitive shape of the container (5);

fixing each blank (4) in the configuration produced by the further bending step.

38) A method as in claims 30 to 37, further comprising at least one step of sterilizing the forming material (9) advancing along the feed path.

39) A method as in claims 30 to 38, wherein the forming material (9) is caused to advance at a predetermined rate of feed in such a way that different processing steps will be performed on the selfsame material (9) substantially at the same tempo.